

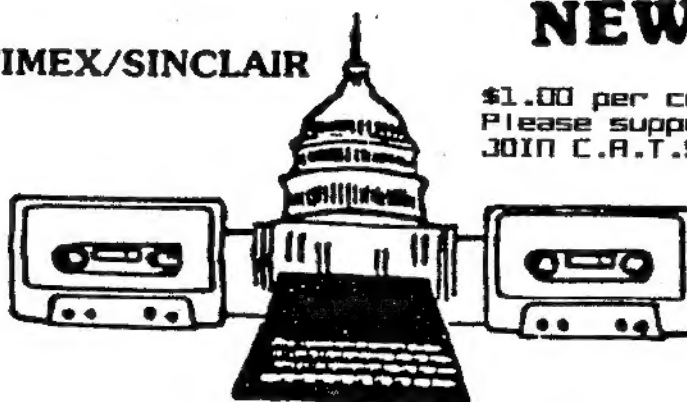
# CATS

CAPITAL AREA TIMEX/SINCLAIR  
USERS GROUP

# NEWSLETTER

\$1.00 per copy  
Please support your computer  
JOIN C.A.T.S.!

Volume 5, Number 9



January, 1988

## HAPPY NEW YEAR FROM CATS

### HARDWARE WORKSHOP PROJECTS

POWER SUPPLY: Protective modifications

KEYBOARD: WD40 "lube" job

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## CONTRIBUTORS

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Peter van Dijk  
Hank Dickson  
George Edmonds  
Mike Rhess  
Courtney Du Bois

## PRESIDENTIAL RAMBLINGS

I'd like to start by thanking Mark Stueber (pronounced Steeber), of Sharp's for coming up last month and demonstrating the new Cambridge Computer Systems (Sinclair) 288 computer. As a reminder this machine has a 128K ROM, and therefore is inherently powerful. In following with the tradition of serving Sinclair computerists, there is no reason why we should not support this computer also (except maybe its hefty price tag). Should anyone be so encouraged to buy one, just let us know and we'll see what kind of support we can lend. Last month was also our annual holiday meeting, which means that we had our annual junk, or rather gift swap. This is one of Hank Dickson's creations. What great fun! Need I say more? We need more of this creativity in the group.

### CHANGE IN MEETING TIMES!!

There was a slight skew-up of times for the meeting in Decem-

ber, but as fate would have it we didn't get skewed at all. Keep in mind that the March meeting will not be on the 2nd Saturday of that month.

### COMING UP

I have the SPEM (Sandy) QL keyboard and I'll bring it to the meeting for all to see. I have a Schoen keyboard that's going into the trashcan. (It suffered from bad engineering.) The SPEM keyboard is very nice and well designed, but expensive. It is not a PC keyboard. We are waiting on the SPEM digitizer and Miracle MIDI.

### HARDWARE MEETING

If you have not WD40'd your QL keyboard, bring it to the hardware session. You'll be in for a real treat. This stuff turns the QL so-so keyboard into a great one.

*Tom Bent*

## FROM THE EDITOR

As this year draws to a close, I think it is appropriate to reflect on the events of the past 12 months and to make some plans for the year to come.

Looking back, one can only say, "Wow!" We really had some noteworthy accomplishments: more members with QLs than any other group, a new Constitution and a sense of organization, and, finally, a firm commitment to explore the entire range of applications of Sinclair computers.

As to the future, we have the capability to be a real powerhouse on the North American Sinclair scene. I must, however, temper my enthusiasm with reality. There are many in the group who are content to sit back and "let the other guy do it". Sound like you? The other day I received a letter from a member saying that the newsletter was too "QLish" and that he wouldn't renew unless we would guarantee that at least 50% of each issue was devoted to the 2068. I can't and won't give a guarantee such as that. In every issue I solicit comments and contributions, but I never heard a peep from this person, till he wrote to cancel. If you don't like the composition of the newsletter, let me know, or, better yet, submit something. Right now apathy reigns. Case in point. Program of the year submissions, 2, from Bob Howard and Joan Kealey. Both took time to write. What about the rest of you? No one said anything to me at the last meeting. Didn't you turn on your machine in the last 12 months? Didn't you get some new software? OK, I'll make it easier, tell me the WORST program published in 1987, for any Sinclair machine!

Please help me and the other 12 people that contribute to the newsletter. Next year let's be able to say we topped 1987.

Now to tell you what's inside. Mark Fisher has written Part 2 of his home database program. I am

hoping Mark will continue with other applications. Why don't you suggest some to Mark? Peter van Dijk has another routine for the plotter. Try this program out, even if you don't have one, since it draws to the screen. Finally, I'd like to say tht the gift swap was outstanding. I don't know who made my gift (a tin full of the best fudge I've ever tasted) but it's the first time I've ever been able to EAT my gift! Again, let me know what you want in the newsletter. Don't assume the other guy will. He's waiting for you.

*Alison*

**February Newsletter DEADLINE: JANUARY 28**

### **JANUARY MEETING SCHEDULE** ~~1988~~ MEETING SCHEDULE

#### **11:00 Hardware Workshop**

QL protective devices.  
Power supply mods.

WD40 your keyboard

#### **2:00 General Meeting**

Demo: SPEN keyboard  
Tutorial: Compilers

#### **4:45 Adjourn**

### **NEWSLETTER SUBMISSIONS**

Submissions for the newsletter can be in hard copy, with columns 35 characters wide, or, preferably, magnetic media. For the QL, microdrive cartridge, 5 1/4" DS/DD or Quad density disks, or 3 1/2" disks. For the 2X81, T61000, or 2068, cassettes only, with titles on the box.

Send material to:  
Editor, CATS Newsletter  
Box 467  
Fairfax Station, VA 22039

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# POT POURRI

News Around the Beltway

## HOLIDAY MEETING FESTIVE FOR SINCLAIR FOLLOWERS

### *The visitor from Mechanicsville*

As promised, Mark Steuber of Sharp's, made a December visit to New Carrollton to present CATS with a sneak preview of the Z88 laptop computer from Cambridge Computer (a.k.a. Sir Clive Sinclair).

Mark gave a thorough demo of the proprietary software imbedded in the Z88; e.g., "Pipedream", a combination spreadsheet, w/p, and simple database.

Though only slightly larger than a Tandy 200, the Z88 with its Z-80(c) CPU, boasts the computing power of a 2nd generation mainframe from the 1960s.

Mark says the Z88 markets for \$499 now, but with the falling dollar, will be going up.

The large CATS attendance appreciated the ingenuity of Mike Warmick, TV production expert. He connected his TV camera to the 25" Sylvania TV donated by Sam Lefkov, and restored by Stan Guttenberg. The whole group was thus able to view—many times enlarged—Mark's manipulations of the keyboard and the results on the Super-Twist LCD screen. Thanks to Mike, Stan, and Sam, CATS is no doubt the first group in the country to have the Z88 presented so graphically.

### *Holiday Gift Exchange*

The CATS membership did an enthusiastic job preparing mysterious gifts for the Second Annual Uncle Clive Sinclair Gift Exchange.

The showstopper, in a huge gold box, was a 13" monochrome monitor, frame included. It was brought by David Klinkhamer. Mark Fisher was the initial recipient,

although it wound up eventually in the hands of Mike Warmick. Phil Russo walked off with one of Mark Fisher's "woodies" (case for Skip Fisher's RGB monitor). This was most appropriate, since Phil was one of the earliest boosters of the monitor project.

Ruth Fegley received a 3 1/2" hard diskette. She says she will wait until next year's gift exchange and hope for a disk drive to go with it.

## Don't Like Your Keyboard? Want a "new" one for nothing?

No, this isn't Joe Isuzu talking. If you want to feel a real difference in your keyboard then bring it to the hardware workshop. We will be applying a liberal dose of WD-40 to the inside area of the keyboard. You will be amazed at how good it feels. After this, you may not want to spring those big bucks for the Shoen or Spem replacement keyboards.

## GROUP BUY INFO LATEST UPDATE

3" drives are no longer available. Peripherals Direct ran out of stock so we only received a few units.

If you are interested in any of the items below, contact the coordinator for more info.

Item	Coordinator/Phone
3 1/2" drives	Vernon Smith: 978-
(1.44 Mb)	1835
Larken IF	Vernon Smith
RGB monitors	Phil Russo: 441-1946
QLs	Tom Bent: (301) 730-
	7187

**We have NO SOLD chips for the TS2000**

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# the PLOTTER: Tips and programs for the plotter user

by Peter van Dijk

A few remarks on program PLOT2.

The program produces a few pretty pictures on the screen and can plot them on the EPSON HI-80. The procedures for the pictures are simple nested loops, doing some basic mathematical calculations to determine coordinates. The program proves that a few lines of SUPERBASIC can produce nice graphics.

Some explanations on the program.

LINE 130: Sets a scale that matches the paper size and unit system of the plotter, so no scaling is required in the plotter commands.

LINE 270: Opens a channel to the plotter. If this line is replaced by line 280 (as in the present program), all plotter commands are sent to a window on the screen. This is useful when debugging programs or if you want to run the program without a plotter. If a printer is connected to SER2 a hard copy of the plotter commands is produced.

LINES 710 and 740 draw lines from an odd number of points on a circle, leaving a "hole" in the middle of the picture. If lines 700 and 730 are used instead, the "hole" is closed.

As the plotter units are integers, the INT function is used for calculations of numbers sent to the plotter.

LINES 860 to 930 are the procedures that transfer the plotter commands DF, MA, etc. in proper format to channel#3.

To use the program for screen output only, the following lines have to be removed:

270,280,290,410,530,620,640,770,830

100 REMARK PICTURES WITH EPSON HI-80

110 REMARK DECEMBER 1987 PETER VAN DIJK

120 WINDOW 512,256,0,0:PAPER 0

130 SCALE 2000,-1600,-1000

140 REPEAT PROGRAM

150 CLS:AT 10,20:PRINT '1) SQUARES':PRINT TO 20,'2) CIRCLES'

160 PRINT TO 20,'3) TRIANGLES':PRINT TO 20,'4) STARS':PRINT TO 20,

```
'0) STOP';
170 INPUT TO 50,KEY:CLS
180 OPENER
190 SELECT ON KEY
200 =1:SQUARES:=2:CIRCLES:=3:TRIANGLES:=4:STARS:=0:CLOSER:STOP
210 END SELECT
220 CLOSER
230 PAUSE
240 END REPEAT PROGRAM
250 REMARK *****
***
260 DEFINE PROCEDURE OPENER
270 REMARK OPEN#3,SER2h:SP KEY:REMARK < OPEN PLOTTER CHANNEL >
280 OPEN#3,CON:WINDOW #3,80,256,0,0:CLS#3:REMARK < PLOTTER COMMANDS TO SCREEN ONLY >
290 MA 1255,960:OR1
300 END DEFINE OPENER
310 REMARK *****
*****
320 DEFINE PROCEDURE SQUARES
330 FACTOR=1:ANGLE=0:INCR=RAD(3)
340 REPEAT ROTATION
350 RESTORE 460
360 FOR CORNER=1 TO 5
370 READ X,Y
380 X1=INT(FACTOR*(X*COS(ANGLE)+Y*SIN(ANGLE)))
390 Y1=INT(FACTOR*(Y*COS(ANGLE)-X*SIN(ANGLE)))
400 IF CORNER=1:LINE X1,Y1:ELSE:LINE TO X1,Y1:END IF
410 IF CORNER=1:MA X1,Y1:ELSE:DA X1,Y1:END IF
420 END FOR CORNER
430 ANGLE=ANGLE+INCR:FACTOR=FACTOR*.95
440 IF ANGLE>=.75*PI:RETURN:END IF
450 END REPEAT ROTATION
460 DATA -900,900,900,900,-900,-900,-900,-900,900
470 END DEFINE SQUARES
480 REMARK *****
*****
490 DEFINE PROCEDURE CIRCLES
500 FOR LOOP=PI/25 TO 2*PI STEP PI/25
510 X=INT(400*COS(LOOP)):Y=INT(400*SIN(LOOP))
520 CIRCLE X,Y,500
530 CA X,Y,500,0,3600
540 END FOR LOOP
550 END DEFINE CIRCLES
560 REMARK *****
*****
570 DEFINE PROCEDURE TRIANGLES
580 FOR RADIUS=800 TO 400 STEP -200
590 FOR LOOP=4E-2*PI*(200/RADIUS) TO 2*PI STEP 4E-2*PI*(200/RADIUS)
600 X=INT(RADIUS*SIN(LOOP)):Y=INT(RADIUS*COS(LOOP))
```

Continued on Page 11



# QL on the QT

by Vernon Smith

My dentist is going to love this year's Uncle Clive Gift Exchange. As I mentioned earlier, my gift was a huge tin of fudge, which was so good my teeth itch whenever I think about it. I have now perfected a one handed data entry technique which allows me to hold the candy in the other...why can't there be CTRL and ALT keys on both sides of the keyboard?

How many of you bought INKWELL and threw it aside as being too crude to be of much use? I did. Well, dig it out and get it upgraded to INKWELL DELUXE v2.8. The revision has everything the original needed but lacked. With it you have the tools required for highly professional font editing: scroll, turn, flip, squeeze, angle, and shadow, to name a few. There are 4 resident fonts and an additional 12 on the cartridge, including one titled ICONS, which contains small pictures and graphics. If you're thinking of doing any work where you want "fancy" text, ID is the program for you. Congratulations to R.J. Walton for a most professional product. It can be purchased direct from Palantir Products, 78 Leighton Road, Bedminster, Bristol. Price is £16 or £7 for an upgrade. Quanta members will pay £14 or £6. Please use a Postal Money Order as they do not accept plastic or US\$ checks. A definite MUST BUY!

Right now I've a lot of checks in the mail for various goodies but none arrived in time to be evaluated. Therefore, a preview of things to come. A keyboard controller chip to prevent rollover. This happens when you accidentally touch an adjacent key and your target letter prints twice. A program called QWRITER to work in conjunction with the Writer's Toolkit I mentioned last month. I'm checking my mail for my well travelled SuperQ Board returning from Strong's so I can check out the Pointer Toolkit. Finally, I've ordered a 1.44 MB 3 1/2" drive. If it works OK, it may be

a Group Buy. Price around \$140 per drive and mounting kit.

Tax time is now upon us—I just received my forms—so sit right down and send a check for \$24.95 to Peter Hale, EMSOFT, P.O. Box 8763, Boston, MA 02114-8763 for Tax-I-QL/87. Its a fantastic buy and, for those that have 512K and disk drives, you can print directly to the IRS forms! Make your MS-DOS folks jealous when you say you got all the features they got but didn't pay \$75 for YOUR program! Say goodbye forever to H&R Block. Needless to say, this is a MUST BUY program.

## LAST CHANCE: DEADLINE IS JANUARY 28

BEST or WORST QL and TS 2060

program released in 1987

SURELY YOU HAVE AN OPINION

### TAPE LIBRARY INFORMATION

The C.A.T.S. tape library is available to all full (\$18) members. Prices, per cassette, are \$3.00 by mail or \$1.00 at the meeting.

Mail order requests, and submissions for publication, should be sent to the tape librarian:

Rev. John Riley  
120 N. Fairlawn Dr.  
Carrollton, GA 30117

Checks or money orders should be made out to C.A.T.S.

We will continue to "compensate" contributors with one free cassette from the library.

# USING ARCHIVE PART II

## Improving the Home Database

### by Mark Fisher

Last month, I covered the basic framework of a home database, suitable for storing phone numbers and addresses for easy reference. Because of space limitations, however, I left out a number of important elements of the program. If you haven't read last month's installment, you're going to feel lost (yes, you may feel lost even if you DID read the piece).

If you used the portions of the program that ran last month, you may have acquired some records that need editing. To do so, here are a few useful procs:

```
proc a
  errchk
  alter
endproc
```

```
proc dele
  prompt:"Confirm DELETE (y/n)
)"
  input txt$
  if lower(txt$)="y"
    delete
  endif
endproc
```

"Srch" allows you to look for a particular bit of data, and returns with the record that contains it. Archive has two basic methods of scanning files, FIND and SEARCH. FIND scans all text fields for a given string, while SEARCH checks all records, trying to find records that satisfy a numeric operator that you specify. For our purposes, FIND is adequate, but if you wanted to find, say, friends named "Tom" that live in "Columbia", you'll have to use proc exit and type it yourself using SEARCH.

```
proc srch
  prompt:"Search for ? "
  input txt$
  if txt$>""
    find txt$
    if found()
      sprint
    else
      warning:txt$+" not found"
      pause:28
    endif
  endif
endproc
```

```
endif
endproc
```

"Exit" will let you switch to the command line of Archive, either to work on your program, or to perform searches or data manipulations not included in your program.

```
proc exit
  blank:11,0
  blank:12,0
  blank:13,0
  blank:14,0
  print at 11,0;"Files are still open! Type ""comget"" to restart."
  print "To select sub-files, use syntax (select instr (flag$,"" [your code here]""))"
  print "To restore full listings, use ""reset:start"""
  stop
endproc
```

One of the first things that the program does on starting, is to ORDER the files by last name. If you want a different sequence, this suite of procs will allow you to select from a variety of possibilities. The ORDER command is quite straightforward, but suffers from several weaknesses: 1) Each invocation of ORDER sets up a data index in RAM. Since there is a relatively small, XfixedY block of memory for this, you may only order on the first eight characters of a given field. 2) Also because of the fixed order buffer, you may only sort by a maximum of eight fields at once. 3) Archive doesn't allow a command to refer to a variable to get the name of a data field. An "ideal" proc for ORDER might look like:

```
proc ordput
  input"Enter field name: ";xx$
  order xx$a
endproc
```

When Archive is executing an ORDER command, it looks only for a field name (xx\$ in this case) - even though you may have set up a normal string variable of the same name. Since there is no data field with that name, the proc will stop with an error report.

What can you do? Well... it's a kluge, but the proc "ordurite" saves off the text of a procedure that will perform the desired

sort. The procedure is then merged with the current program and executed. First, the proc "ordr" presents possible fields to be ordered:

```
proc ordr
  cls
  print "Order files by:"
  local count
  let count=0
  while count<numfld()
    print tab 16;count;" ";field
n(count)
    let count=count+1
  endwhile
  let OK=0
  while not OK
    input "Enter choice #: ";num
    let OK=(num>0 and num<numfld
0)
  endwhile
  let ord%=fieldn(num)
  ordwrite
  screen
endproc
```

```
proc ordwrite
  spoolon "sequence_prg" export
  lprint "proc ordput"
  lprint "order "+ord%+";a"
  lprint "endproc"
  lprint chr(8)+chr(26)
  spooloff
  merge "sequence"
  ordput
  kill "sequence_prg"
endproc
```

Here are a few procs to ease movement through your file; "page" and "rev" allow you to automatically leaf through the file, stopping when you press "ESC":

```
proc page
  escmsg
  while not eof()
    sprint
    pause;10
    next
  endwhile
endproc

proc rev
  escmsg
  while recnum()>0
    bk
    pause;10
    sprint
  endwhile
endproc

proc escmsg
  prompt;"Press ESC to stop."
endproc
```

"Info" loads a second screen file

containing your description of how this program operates, then waits until a keypress to re-load the basic screen layout.

```
proc info
  cls
  sload "info"
  screen
  print at 12,0;"Memory available: ";memory();",
    ";count();" records in file."
  prompt;"Press any key to return"
  let c%=getkey()
  sload "phonscrn"
  screen
endproc
```

At the end of your editing session, you will almost certainly want a hard copy of the files; "lprnt" takes care of that. To avoid wasting too much paper, I use the "spoolon" command to divert the output from printer to screen.

```
proc lprnt
  cls
  print "Output to screen or printer? (S/P)"
  if upper(getkey())="S"
    spoolon screen
  else
    print "Is printer ready? Space to continue, Q to quit"
    if getkey()<>" ": screen :
return : endif
  endif
  first
  while not eof()
    lprint Hon%; tab 5;fname%;
    ";lname%; tab 30;hphone%;tab 5
0;ophone%
    lprint tab 6;street%; " ";ct
y%; " ";st%; " ";zip%; "(";flag%;")
  endwhile
  lprint
  next
  let c%=getkey()
endwhile
spooloff
screen
endproc
```

That's it! As with any file system, I'm sure that you'll have some special requirements that aren't covered by this application. I hope that you will gain enough familiarity with Archive through this tutorial to make the necessary changes - if not, write me a note and I'll try to respond in this newsletter.

**CATS 7 JANUARY**

# focus on: **TIMEXsinclair** **2068**

Selected articles from other  
users' groups' newsletters

## NEW 2068 MAGAZINE by George Edmonds

From the O/FW Data Expansion- November, 1987

I have received an announcement from Bill Jones in Panama City, Florida concerning his new magazine 'T.S. 2068 UP-DATE' which is devoted entirely to 2068 users. Bill is really pleased with the response his magazine has received and already has over 100 subscribers. Bill is planning to expand the coverage to include a broad range of topics so that all 2068 users will find the magazine of value. My impressions of his magazine is that disk-drive users will especially be pleased with this magazine as all disk systems are going to be covered in detail.

The magazine is published quarterly and is \$12 for a years subscription. For more information or to subscribe contact:  
Mr. Bill Jones, TS-2068 UP-DATE,  
1317 Stratford Avenue, Panama City, FL 32404, Telephone: (904) 871-4513.

## FAKE OUT YOUR DATA STATEMENTS by Sven Nilsson

From The Hacker, TSUG of Las Vegas, December, 1987

10 REM DATA LINE FAKER  
by Sven Nilsson

Prints a program which displays existing machine code as DATA statements. This provides a "loader" program which may be easily copied by another user.

30 INPUT "Start address? ";m;INPUT "Last address? ";n

```
30 LET p=0: PRINT " 'n-m+1; "bytes" ' INT
((n-m+1)/14)+1; "DATA lines required" ' ' '
"Press" ' ' P for hard copy" ' ' S for
screen display": PAUSE p
40 IF INKEY$="p" OR INKEY$="P" THEN LET
p=1: OPEN #2,"p"
50 CLS: PRINT " 1 REM machine code
loader" ' ' 2 CLEAR "m-1;": FOR i="m;" TO
";n;": READ n: POKE i,n: NEXT i
60 LET i=3: FOR j=m TO n STEP 14: GO SUB
500: PRINT "DATA "; : FOR k=0 TO 13: IF
(k+j)>n THEN GO TO 80
70 PRINT PEEK (k+j); ";";
80 NEXT k: PRINT CHR$ 8; " "; NEXT j
90 GO SUB 500: PRINT " PRINT ' ' '
calculating checksum " "; FLASH 1; "
please wait" "
100 GO SUB 500: PRINT " LET n=0: FOR i="m;
" TO ";n;": LET n=n+ PEEK i: NEXT i: CLS:
PRINT " "cksum=" ";n"
110 GO SUB 500: PRINT " SAVE " " code "
CODE ";m; " "; n-m+1" '
120 CLOSE #2: PRINT "Calculating checksum
"; FLASH 1; "Please wait"
130 LET k=0: FOR j=m TO n: LET k=k+ PEEK
j: NEXT j: POKE 23689,PEEK 23689+1
140 PRINT " When you RUN the program, it
puts the code into area "; m; "-"; n; " '
" SAVE at the prompt. To reload, use LOAD
" " " " CODE. "
150 PRINT " The checksum on your screen
should be "; k; " ' " If not, look for a
typing error (probably in a DATA
statement). "
160 IF p THEN LET p=NOT p: OPEN#2 , " p ":
GO TO 140
170 CLOSE #2: STOP
500 PRINT TAB 4-LEN STR$ i; i; : LET i=i+1:
RETURN
9997 CLEAR 63677: LOAD " " CODE
9998 CLEAR 63677: LET m=63678: LET
n=65535: GO TO 30
9999 SAVE " DATA LINE FAKER" LINE 9997:
SAVE " CODE "CODE 63678,1852
```

FOOTNOTE: In this program, the large  
0=zero's and the o's are o's. Please do  
not get them confused.

**CATS 8 JANUARY**



# PIANO

by Mike Rhess

The Hacker, TSUG of Las Vegas, November, 1987

TURN YOUR 2068 COMPUTER INTO A MUSICAL INSTRUMENT. LET YOUR ARTISTIC TALENT SHINE THROUGH AS YOU BECOME THE LIFE OF THE PARTY, WITH "PIANO". THIS PROGRAM WAS WRITTEN BY OUR OWN MIKE RHESS AND IS SIMPLE TO USE. IT IS ALL MENU DRIVEN AND CAN EVEN BE PLAYED BY A YOUNGSTER. WE AT TSUG OF LV HOPE YOU ENJOY THIS LITTLE PROGRAM.

```

10 REM "BASIC piano"
20 GO TO 8000
100 LET a=USR 65286
110 LET b=PEEK 65280: LET c=PEE
K 65281: LET d=PEEK 65282
120 IF NOT c THEN LET e=e-SGN e
GO TO 140
130 LET e=15: SOUND 1,a(c);0,b(
c)
140 IF NOT d THEN LET f=f-SGN f
GO TO 160
150 LET f=15: SOUND 3,a(d);2,b(
d)
160 IF b THEN SOUND 5,a(b);4,b(
b);13,0
170 SOUND 8,e;9,f
200 IF r AND a THEN LET c(i)=a:
LET a$(i)=CHR$ b+CHR$ c+CHR$ d:
LET i=i+1
400 GO TO 100
1000 SOUND 7,56;10,16;12,25: RAN
DOMIZE USR 65442: FOR i=1 TO x:
RANDOMIZE c(i+1)
1010 LET b=CODE a$(i,1): LET c=C
ODE a$(i,2): LET d=CODE a$(i,3)
1020 IF NOT c THEN LET e=e-SGN e
GO TO 1040
1030 LET e=15: SOUND 1,a(c);0,b(
c)
1040 IF NOT d THEN LET f=f-SGN f
GO TO 1060
1050 LET f=15: SOUND 3,a(d);2,b(
d)
1060 IF b THEN SOUND 5,a(b);4,b(
b);13,0
1070 SOUND 8,e;9,f
1030 IF USR 65425 THEN GO TO 102
0
1090 NEXT i: SOUND 8,0;9,0: PAUS
E 50: GO TO 1000
6000 PRINT AT 2,0;"Press ""BREAK
and SHIFT""", "to Exit"";: R
ETURN
6500 REM tape
6510 GO SUB 6000: PRINT AT 3,8;"
SAVE"
6520 INPUT "Enter SAVE name "; L
INE i$: IF LEN i$>10 THEN GO TO
6520
6530 IF i$="" THEN LET i$="piano
/data"
6540 PRINT AT 4,0;"SAVEing data
under the name""",i$,"""
6550 SAVE i$ LINE 6700: STOP
7000 SOUND 8,0;9,0: LET e=0: LET
f=0: IF r THEN LET x=i-1: REM e
rror trap
7010 IF INKEY$<>"" THEN GO TO 70
10

```

```

7020 LET i=1: LET r=0: ON ERR RE
SET : PRINT AT 2,0;"Select Mode:
1=PLAY", "2=RECORD", "3=PLAY
BACK", "4=SAVE"
7030 LET i$=INKEY$: IF i$<"1" OR
i$>"4" THEN GO TO 7030
7040 GO SUB 6000: ON ERR GO TO 7
000: IF i$="1" THEN PRINT AT 3,8
;"PLAY mode": GO TO 7100
7045 IF i$="4" THEN GO TO 6500
7050 IF i$="2" THEN LET r=1: PRI
NT AT 3,8;"RECORD mode": GO TO 7
100
7055 IF INKEY$<>"" THEN GO TO 70
55
7060 PRINT AT 3,8;"PLAYBACK mode
""Speed"": FLASH 1;"?"; FLASH 0;
" (1 thru 4)": LET i$=INKEY$: IF
i$<"1" OR i$>"4" THEN GO TO 706
0
7070 PRINT AT 4,0;"
": POKE 65433,VAL i$: GO TO
1000
7100 IF INKEY$<>"" THEN GO TO 71
00
7110 GO TO 100
8000 REM setup tables
8010 CLEAR 65280: LET r=0: DIM a
(40): DIM b(40)
8030 SOUND 7,56;10,16;12,25
8040 DIM a$(1000,3): DIM c(1000)
8100 RESTORE
8110 FOR a=1 TO 40: READ a(a),b(
a): NEXT a
8130 RESTORE 8600: FOR a=65280 T
O 65446: READ b: POKE a,b: NEXT
a
8500 DATA 2,114,2,46,1,241,1,166
,1,162,2,79,2,14,1,213,1,166,1,1
36
8510 DATA 0,221,0,209,0,166,0,16
5,0,156,0,234,0,221,0,197,0,175,
0,165,0,98
8520 DATA 0,110,0,117,0,131,0,14
7,0,93,0,104,0,110,0,124,0,139,0
,234
8530 DATA 1,7,1,39,1,75,1,95,0,2
46,1,23,1,57,1,75,1,116
8600 DATA 0,0,0,0,0,0,175,33,3,2
55,6,3,119,35,16,252,6,254,72,60
,50,32,255,30,5,237
8610 DATA 80,203,10,56,33,62,0,3
3,0,255,197,6,3,190,40,69,35,16,
250,33,3,255,175,6,3,190,40,5,35
,16,250,24,18,50,32,255,119,193
8620 DATA 33,32,255,52,29,32,212
,203,0,56,204,24,1,193,1,0,3,33,
0,255,17,3,255,26,190,40,1,12,11
9,35,19,16,246,175,185,200,237
8630 DATA 75,120,92,50,120,92,50
,121,92,201,35,35,35,175,190,40,
197,229,33,3,255,175,6,3,190,40,
6,35,16,250,225,24,199,227,126
8640 DATA 245,58,32,255,119,241,
225,24,173,42,116,92,237,91,120,
92,6,1,237,82,16,252,1,1,0,240,1
1,175,24,194,0
8650 DATA "14G", "17K", "034", "067
", "10A", "056", "15H", "001", "113",
"19", "023", "090", "12D", "18L", "0
78"
8660 DATA "0b f", "0cZg", "EdXa", "
ReCb", "TfUc", "YgBd", "UaNe", "IbHf
", "0c g", "Pd a"
8700 REM screen
8710 BORDER 4: PAPER 4: CLS : IN
K 9

```

Continued on Page 18

## TS2068 COLOUR PRINTOUTS

by Jeff Taylor

SINC-LINK, Toronto TSO Club, Sept/Oct, 1987

Almost every user has, at one time or another, wished he could capture his work in colour. However, most colour printer prices would deter the average home enthusiast. Now, thanks to an ingenious new interface, colour printouts of both text and pictures can be had for an affordable cost.

John McMichael, of Laramie, Wyoming, has built an interface to mate a TS2068 to a Commodore VIC-1520 plotter/printer. Now before you start grumbling about using the 'competition' remember that any full-size printer you use is also the 'competition'. Keep an open mind.

The 1520 is a four colour (black, blue, green, red) plotter which draws on a standard 4.5 inch wide roll of calculator paper. While it won't do single points, it is capable of a single step to a resolution of 0.2mm (can you see the difference?). The 1520 has 4 character sizes (10, 20, 40 & 80 columns per line), 16 dash sizes, 90 degree character rotation and upper and lower case character set which matches all of the TS2068's when used with the interface.

Mr. McMichael's interface is a very neat and professional looking printed circuit board containing just four IC's and one capacitor. As received, the board has a keyed edge connector to fit in the rear bus of the TS2068, a 6-pin plug on a 4-conductor cable to connect the plotter and such useful details as onboard strain relief for the cable and even a plastic foot to prevent strain on the edge connector.

He has also produced 2 software tapes. The first is a driver/demo which in demo mode will show the capabilities of the plotter and in driver mode can be used to build your own plotter programs. The second is a Screen to Plotter utility program which allows you to either draw a freehand sketch on tv screen (keyboard or Joystick) which the plotter matches move for move or you load an existing SCREEN\$ picture of your own and trace it on tv screen, the plotter following each movement.

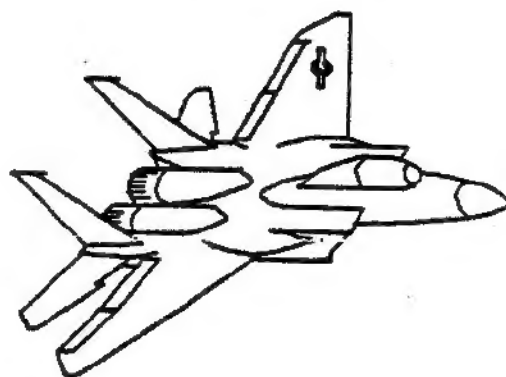
Prices for the interface range from \$14.95US for the bare board and driver/demo tape, \$20.95US for the kit of board, parts and tape to \$35.90US for the assembled and tested unit with optional edge connector and the demo tape. The utility tape is an additional \$8.95.

The printer/plotter, like the TS2068, is an 'orphan' in that it was discontinued by Big C. It is still available here in Toronto at most Woolco stores (haggle the price down, they are happy to move them) and was reported at Active Surplus Annex at \$150.00. Commodore will service the machine and parts, paper and pens can be purchased from them, so you know support is still around.

For more information contact: Mr. John McMichael, 1710 Palmer Drive, Laramie, Wyoming, USA, 82070. Send SAE and MO.

I highly recommend this interface/plotter combination to those enthusiasts who seek colour printouts and plots at an affordable price.

This review and these demo plots were all produced by a TS2068 on a VIC-1520 plotter/printer & a McMichael interface.



```
8720 PRINT TAB 7; PAPER 2;" TS-2
868 PIANO "
8730 LET i$=""
      FOR a=7 TO 13: PRI
NT PAPER 7; AT a,1;i$; AT a+8,0;i$
: NEXT a
8740 FOR a=0 TO 250 STEP 24: PLO
T a,0: DRAW 0,56: PLOT a+8,64: D
RAW 0,56: NEXT a
8750 PLOT 0,0: DRAW 240,0: PLOT
8,64: DRAW 240,0
8760 RESTORE 8650: FOR a=0 TO 14
: READ i$
8770 LET c=56+64*NOT VAL i$(1):
LET b=4+24*VAL i$(2)+16*VAL i$(1
): FOR b=b TO b+12: PLOT b,c: DR
AW 0,-24: NEXT b
8780 PRINT AT 8+8*VAL i$(1),1+3*
VAL i$(2)+2*VAL i$(1); PAPER 1;i
$(3)
8790 NEXT a
8800 FOR a=1 TO 30 STEP 3: READ
i$
8810 PRINT PAPER 6; AT 12,a+1;i$(
1); AT 20,a;i$(3); PAPER 7; AT 10,
a+1;i$(2); AT 18,a;i$(4)
8820 NEXT a
8830 PAPER 1
8890 GO TO 7000
9999 SAVE "piano" LINE 0: VERIFY
```

CATS 10 JANUARY

## QUICKSORT

by Courtney Du Bois

LineLines, 1506s of the SF Bay Area, Sept. 1987

The purpose of this algorithm is to sort a large array very quickly, using as little memory overhead as possible.

The goal of each pass is to place an element of the array in its final position. While it does this, it also partitions the array into two subsets: those elements less than or equal to the sort key and those with values greater than the key. Each time the array is sub-divided, the larger is stacked and the other is processed. The process is repeated on each subset until all elements have been processed.

Consider this example:

42 23 74 11 65 58 94 36 99 87

Two index variables I and J with the values 1 and 10 are used. K(I) and K(J) are compared and if no exchange is necessary J is decremented by 1 and the process is repeated. When K(I) >= K(J), they are exchanged. 'I' is incremented by 1 and this processed until another change occurs.

The sequence of exchanges for placing 42 in its final position where the numbers preceded by an asterisk are being compared is as follows:

```
#42 23 74 11 65 58 94 36 99 #87
#42 23 74 11 65 58 94 36 #99 87
#42 23 74 11 65 58 94 #36 99 87
36 #23 74 11 65 58 94 #42 99 87
42 23 #74 11 65 58 94 #42 99 87
42 23 #42 11 65 58 #94 74 99 87
42 23 #42 11 65 #58 94 74 99 87
42 23 #42 11 #65 58 94 74 99 87
42 23 #42 #11 65 58 94 74 99 87
42 23 11 42 65 58 94 74 99 87
```

The original array has now been partitioned into two subsets: (36, 23, 11) and (65, 58, 94, 74, 99, 87).

Designed to be used as a subroutine, the program requires an array K and a variable N, where N = the number of elements in the array, as input. It begins by stacking the lower and upper boundaries of the entire array in the arrays L and U. T is the stack pointer. Lines 2040 through 2060 unstacks the boundaries of each unprocessed subset. Lines 3000 through 5090 partitions a subset. K saves the sort key. Lines 5000 through 8100 stacks the boundaries of the larger subset. Lines 10 through 60 are included for demonstration purposes.

This algorithm has two shortcomings:

1. It is not appropriate for small arrays (say 10 elements or less).
2. The worst case for this algorithm is when the array is already sorted.

A worthwhile enhancement to this program would be to check the difference of the subset boundaries at line 2065 and if it is less than or equal to 10, use another sorting method.

NOTE: The 'LN' in line 1004 is the natural logarithmic function. Enter, Function Z (shift and enter then press the Z key) to obtain it. The sort took 4 minutes on the PC and 8.5 minutes on the TIMEX.

Mr. Du Bois is a former member of TIMEX Sinclair EBZUG, Berkeley, CALIFORNIA.

TO BE CONCLUDED NEXT MONTH

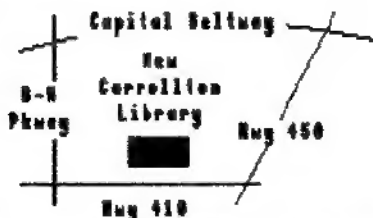
the PLOTTER-Continued from Page 4

```
640 DR 200,100:DR 0,-200:DR -200,
100
650 END FOR LOOP
660 END FOR RADIUS
670 END DEFINE TRIANGLES
680 REMark *****
*****
690 DEFINE PROCEDURE STARS
700 REMark FOR POINT1 =.1*PI TO 2
*PI STEP .1*PI
710 FOR POINT1 =2*PI/19 TO 2*PI S
TEP 2*PI/19
720 X=INT(900*COS(POINT1)):Y=INT(
900*SIN(POINT1))
730 REMark FOR POINT2=POINT1+.1*P
I TO 2*PI STEP .1*PI
740 FOR POINT2=POINT1+2*PI/19 TO
2*PI STEP 2*PI/19
750 X1=INT(900*COS(POINT2)):Y1=IN
T(900*SIN(POINT2))
760 LINE X,Y TO X1,Y1
770 MA X,Y:DA X1,Y1
780 END FOR POINT2
790 END FOR POINT1
800 END DEFINE STARS
810 REMark *****

820 DEFINE PROCEDURE CLOSER
830 DF:CH:CLOSE#3
840 END DEFINE CLOSER
850 REMark *****

860 DEFINE PROCEDURE DF:PRINT#3,'
DF':END DEFINE
870 DEFINE PROCEDURE MA(I,J):PRIN
T#3,'MA ':I:',':J:END DEFINE
880 DEFINE PROCEDURE DA(I,J):PRIN
T#3,'DA ':I:',':J:END DEFINE
890 DEFINE PROCEDURE DR(I,J):PRIN
T#3,'DR ':I:',':J:END DEFINE
900 DEFINE PROCEDURE OR1:PRINT#3,
'OR ':END DEFINE
910 DEFINE PROCEDURE CH:PRINT#3,'
CH':END DEFINE
920 DEFINE PROCEDURE CA(A,B,R,A1,
A2):PRINT#3,'CA ':A:',':B:',':R:',
':A1:',':A2:END DEFINE
930 DEFINE PROCEDURE SP(P):PRINT#
3,'SP ':P:PRINT#3:END DEFINE
```

CATS Newsletter  
P.O. Box 467  
Fairfax Station, VA 22039



The next meeting of CATS will be held on:

Saturday, January 9, 1988 11:00 AM Hardware Meeting  
2:00 PM General Meeting

At: New Carrollton Public Library  
7414 Riverdale Road (Hwy 410), New Carrollton, MD

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Q2X QBS: (505) 522-7081 FID0 net 15, node 6. East Coast dial (703) 547-4815 FID0 net 18, node 9.

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